



Research Article



EFL Learners' Mobile Affordances: A Focus on Technophobia and Technophilia

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ABSTRACT

Introduction: The rapid evolution of technology and the increasing use of e-learning in educational settings make mobile affordances an important consideration. However, some individuals may experience technophobia, fear, or anxiety towards technology, while others may feel technophilia, a positive attraction and enthusiasm towards it. The present research attempted to investigate the interrelationship between the Iranian EFL learners' mobile affordances and their sense of technophobia and technophilia. Besides, it was aimed to determine any significant difference between Iranian EFL learners' sense of technophobia and technophilia regarding their gender.

Methodology: The study utilized a quantitative correlational research design. A total of 200 EFL learners participated in the study using the convenience sampling method. The data were collected using technophobia and technophilia questionnaires and mobile affordances inventory. A Pearson correlation test and two independent samples t-tests were performed to analyze the data collected.

Results: The results of the Pearson correlation coefficient indicated an inverse and negative correlation between EFL learners' mobile affordances and their sense of technophobia, while a relatively positive correlation between Iranian EFL learners' mobile affordances perceptions and their sense of technophilia was found. Moreover, the findings revealed that gender was not a significant factor in explaining differences in technophilia and technophobia among EFL learners.

Conclusion: The results indicated an inverse and negative correlation between EFL learners' mobile affordances and their sense of technophobia. This suggests that as learners perceive more mobile affordances, their technophobia decreases. Additionally, this implies that as learners perceive more mobile affordances, their technophilia increases. The findings suggest that mobile affordances play a significant role in reducing technophobia and increasing technophilia among EFL learners. This highlights the importance of incorporating mobile technology in educational settings to promote positive attitudes toward technology.

1. Introduction

Due to the development of technology and e-learning, the role of mobile affordances in learning has become of great importance. Affordances, firstly, have been defined by Bruce et al. (2003) as the actions and interactions offered by the environment and surroundings. Accordingly, many researchers have outlined the main affordances of mobile. Naismith et al. (2004) have noted the portability of the device, meaning that it can be carried easily. Orr (2010) has stated that data Gathering would be one of the main affordances. Lai et al. (2007) propose that interactions with mobiles are more important; thus, it all

depends on how a user is working with the device. Besides, So et al. (2008) have brought up a new aspect of the device, which is contextualization and active learning. Tan and So (2015) also declare that the mobile is an outer environment for learning that has a great effect on the efficiency of learning, the richer the environment, the more efficient the learning.

As one of today's modernizing factors, the major ability of technical innovations is changing the world (Boehme-Neßler, 2011). This change and technical innovations sometimes lead to the feeling of technophobia.

Technophobia is not an illness that needs treatment or medical consideration. Everywhere that there is technology, the technophobia concept occurs. Whether in public places, such as schools and libraries, or private sectors, like supermarkets and clinics (Fallad et al., 2012.). Brosnan (2002) defines this phenomenon as the fear of computers as well as holding aggressive thoughts and beliefs toward them. Moreover, it can also be defined as how human beings are going to interact with computers in the future, and brings anxiety and fear for them as well as negative attitudes (Rose & Weil, 1990). Therefore, it is described as the combination of situational, emotional, and behavioral replies to computers that bring great fear and anxiety.

On the contrary, technophilia is how human beings are attracted to using computers, also referred to as enthusiasm toward computers (Osiceanu, 2015). According to Ullman (2012) technophiles not only lack a fear of technology and computers, but they actively embrace newness and innovation. Moreover, the term technophilia is employed to focus on technology which leads to strong positive feelings, so it is expressed by simply adapting to the social changes brought by technological innovations (Osiceanu, 2015).

Mobile affordances, technophobia, and technophilia appear to be associated from different aspects. In this regard, some studies have been conducted to investigate the relationship between variables individually (Abbasi & Tabatabaee-Yazdi, 2021; Baghcheghi, 2020; Becta, 2010; Dincher & Wagner, 2021; Dyck & Smither, 1994; Edison & Geissler, 2003; George & Ogunniyi, 2016; Harris, 2002; Hashim, 2008; Kantrowitz & Rosenberg, 1994; Khasawneh, 2015; Korukonda, 2005; Lam, 2016; Longe & Uzoma, 2007; Rahimi & Yadollahi, 2010; Sariçoban, 2013; Stockwell, 2008; Taiwo, 2009; Uche, 2011; Wang & Higgins, 2006; Wild et al., 2019), nonetheless they did not provide a clear and comprehensive picture of the relationship between these three important variables at the same time. Specifically, in the context of language learning environment, little is known about the relationship between these three variables. Moreover, the relationship between these three concepts is quite new to the context of Iran. Due to such gaps in this area, the present study explored the relationship between Iranian English as a foreign language (EFL) learners' mobile affordances and their sense of technophobia and technophilia by administering two questionnaires. To address the aims of the present study, the researchers proposed the following research questions:

1. Is there any significant relationship between Iranian EFL learners' mobile affordances perceptions and their sense of technophobia?
2. Is there any significant relationship between Iranian EFL learners' mobile affordances perceptions and their sense of technophilia?
3. Is there any significant difference between Iranian EFL learners' sense of technophobia regarding their gender?
4. Is there any significant difference between Iranian EFL learners' sense of technophilia regarding their gender?

1.1. Review of the related literature

Oxford dictionary defines affordances as a property of an object which is provided by the environment. According to Gibson (1986, as cited in Egessa et al., 2021), affordances are perceived based on the specific requirements of the situation, and they are not related to the actor's ability. Thus, affordances are directly related to the reasons for which individuals select one technology or device over another to achieve their goals in teaching or learning. Norman (1988) state that perceived affordances are determined by the usability of a device. Lloyd (2019) describe affordance as the way an observer needs or perceives it. Both of these perspectives emphasize individual perception and assert that affordances only exist when users recognize them. Consequently, it becomes evident that the manner in which a device is utilized holds greater significance than the device's physical form.

According to Korukonda and Finn (2003), technophobia is the basic problem in the most recent 20 years. Today most students and teachers use computers to learn and teach in a virtual environment. However, nearly one-third of these individuals experience technophobia when confronted with advanced tools. This fear is much greater when teachers and students use personal computers (PC) and computerized media. As technology continues to advance, its usage becomes increasingly complex, underscoring the importance for users to regularly update their skills and receive training on new software.

During 32 weeks, Parsons et al. (2016) investigated teachers and learners who used mobile devices in their teaching and learning process. The results of this study have indicated that mobile devices are more useful compared to computers and laptops due to their size. For this reason, learners and teachers can use them inside and outside the classroom. Some affordances, such as mobility, communication, and data gathering, are the most important affordances of mobile devices which can be used by teachers and learners. It means that mobile devices provide situations to communicate through Facebook or Twitter and gather data through quizzes and Google Docs. Moreover, the data can be saved to be used when needed.

According to Martínez-Córcoles et al. (2017), technophilia has three principal scales, including enthusiasm, dependency, and techno reputation. The enthusiasm scale means the attraction of individuals toward the employment of technologies (Osiceanu, 2015). Technophilia involves behaviors and feelings, such as need and techno reputation. It is not just a simple requirement or optimistic viewpoint to apply technology like enthusiasm (Martínez-Córcoles et al., 2017). Schein (1985) also claims that civilization has built a dependency on technology. He identifies that when a group of people or society succeeds in solving a problem and gaining a solution for their trouble, this solution is repeated many times and eventually accepted as the norm. Then, the people could not organize or perform differently, such as such as opting to send an email or a message instead of a traditional letter when

communicating with someone in another city. Therefore, dependence on technology is advanced. Dependency highlights controlling and emphasizing the use of innovations (Martínez-Córcoles et al., 2017). Finally, techno reputation is related to the need to update. People associate their eagerness and dependence with the scare of missing the opportunity to connect, have, or renew technological tools. Similarly, individuals can spend lots of money on technological tools that they might not need or even employ, but they like to have the newest and the latest products on the market (Martínez-Córcoles et al., 2017).

Demir and Akpinar (2018) used a quasi-experimental design using an achievement test to investigate the achievement of learners who use mobile devices in their learning. The findings of an interview, which was designed to examine the learners' attitudes, showed that they had a positive view toward the affordances of mobile devices. Learners believed that they could perform better using mobile devices. In addition, learners stated that they would use mobile devices in the future because they found them so effective.

Khasawneh (2018) sought to create a rapid evaluation instrument for measuring technophobia, independent of any specific technology, and investigate whether it should be viewed as a unified concept or as a composite of various sub-dimensions. The items on the scale were developed based on a review of the relevant literature and research on the existing technophobia scales and their items. An initial questionnaire of 72 items was developed with questions about various technologies. Later on, only 30 items remained in the questionnaire, and a five-point Likert scale with responses ranging from 5 (*agree*) to 1 (*disagree*) was utilized to record participants' responses.

Besides, Nimord (2018) explored technophobia among older Internet users. The utilization of the internet can assist older individuals in maintaining their independence, social connections, and overall quality of life. However, the fear or discomfort towards modern technology, known as technophobia, can restrict the online activities and benefits experienced by older internet users. Existing research on technophobia in elderly people primarily focuses on those who do not use technology, neglecting to consider older individuals proficient in advanced technologies. To address this gap, an online survey was conducted with 537 internet users aged 60 and above to examine how technophobia impacts their online activities. Consequently, varying degrees of technophobia were observed among users, and significant correlations were found between technophobia and patterns of internet use, including the type and complexity of usage. Technophobia has also been linked to the education, health, and well-being of its users. The results show that technophobia plays a role in the first and second levels of digital inequality among older adults. They also suggest that technophobia may be a risk factor for the elderly, which should be taken into account by older users when planning interventions to reduce technology phobia in older people.

Minikutty and Thomas (2019) attempted to investigate the impact of technophilia on the academic achievement of higher secondary school students. The sample comprised

450 higher secondary students randomly chosen from schools. The findings uncovered that scholastic accomplishment and technophilia were negatively related. Technophilia impacts the scholarly accomplishment of higher secondary school understudies negatively. The consequences of the research infer the production of mindfulness on prudent utilization of innovation of any students.

Xue and Churchill (2020) investigated the educational affordances of mobile social media for language teaching and learning through a qualitative single case study approach in mainland China using a purposive sampling strategy to select the participants. The classes the teacher took were equipped with computers, projectors, and internet connections, and she could perfectly use WeChat. The data collection procedures included observation, semi-structured interviews, as well as documents and artifacts provided by the teacher were used. The data was analyzed through an inductive approach using content analysis through open coding. The findings identified five mobile social media educational opportunities, including a motivational environment, resource access and sharing, assessment and feedback, management for learning, and content generation. The results also indicated that teachers' theories on technology integration have changed through the use of these tools.

In another study, Abasi and Tabatabaee-Yazdi (2021) investigated the relationship between Iranian EFL teachers' personality traits and their sense of technophobia and technophilia. To explore this relationship 210 Iranian EFL educators took part in this research. The Big-Five Personality Traits Questionnaire (John & Strivastava, 1999) and Technophobia and Technophilia Questionnaire (Martínez-Córcoles et al., 2017) were used for data collection. The findings indicated that all personality traits' subscales were not positive significant indicators of technophobia except neuroticism. Moreover, there was a positive significant relationship between overall technophilia and all constructs of personality traits.

In their study, Damani et al. (2022) aimed to investigate the use of educational technology (EdTech) in girls' education at Promoting Education in African Schools (PEAS) schools in rural Uganda during the school closures caused by COVID-19. They employed a sequential, explanatory mixed-methods case study approach. Initially, they conducted a quantitative analysis of data from 483 students across 28 PEAS schools. Subsequently, interviews were conducted with PEAS staff to provide further insights into the reasons and context behind the findings. The results indicated that female students were less likely than male students to have access to their parents' smartphones for learning purposes. Radio was identified as the most beneficial form of EdTech for girls' academic learning, and girls demonstrated significantly more interest in listening to radio stations, compared to boys. Additionally, economically disadvantaged boys showed more enthusiasm for SMS, compared to wealthier boys. Apart from gender differences, students with highly educated

parents found SMS messages more helpful, and calls from teachers appeared to boost younger students' self-confidence.

Rouf et al. (2022) investigated the perception of various respondent groups regarding the elements that impact internet learning for advanced education in Bangladesh during the COVID-19 pandemic. A survey through an organized questionnaire was directed to assemble qualitative data from the 250 respondents (college understudies, employees, and regulatory officials) in Bangladesh. The result of this research demonstrated that a large number of the respondents found that internet-based classes could be more difficult than conventional classrooms as a result of the innovative limitations, computerized partition, inadequate information pack to get to the material to go to the class, poor network, absence of gadget, poor learning condition, technophobia, deferred reaction and the inability of the educator to deal with productively the material and correspondence hardware.

Rostami and Kargozari (2023) developed and validated a 53-item mobile learning affordances inventory. The second goal of their research was to investigate mobile affordances used among Iranian EFL learners in terms of age, gender, degree, and field of study. They employed a quantitative method, and 159 EFL learners participated in their study voluntarily. The findings revealed that all items in their created scale had a goodness of fit to the CFA model, so the validity of the inventory was confirmed. Moreover, they claimed that their created scale was reliable; therefore, it could be used as a measurement of mobile learning affordances in EFL learning contexts as well as educational contexts other than English. Their study also indicated no differences among EFL learners in using mobile learning affordances regarding their gender, age, degree of study, and field of study.

2. Methodology

2.1. Participants

The present research invited 200 participants (34% males and 66% females) to take part in the study using two questionnaires, namely Technophobia and Technophilia Questionnaire (Martínez-Córcoles et al., 2017) and Mobile Affordances Inventory by Rostami and Kargozari (2023). The participants' age ranged from 14 to 42 years ($M = 21$, $SD = 7.6$). This diverse representation of the population's age allowed a wide range of perspectives and experiences to be captured. Including participants from different age groups, the researchers examined how attitudes toward technology vary across generations, considering that older participants may have different levels of familiarity and comfort with technology, compared to younger participants. This provided insights into how technological advancements have influenced attitudes and behaviors over time. Additionally, the researchers conducted the study by inviting participants from different proficiency levels (advanced, upper intermediate, lower intermediate, and

elementary). In this regard, including participants from different proficiency levels allowed the researchers to explore how technological skills and knowledge impact attitudes toward technology. Advanced users may have a more positive view of technology due to their higher level of proficiency, while elementary users may exhibit more technophobia due to their limited experience or understanding. Data collection started in the Spring of 2022 and lasted about a month. Moreover, the sampling of the research was based on the convenience method.

2.2. Instruments

2.2.1. Mobile Affordances Inventory

This questionnaire has been developed by Rostami and Kargozari (2023), consisting of 53 items. This questionnaire consisted of two parts. The first part was related to participants' socio-demographic information, such as name, gender, age, and fields of study. The second part consisted of six constructs, namely connectivity (items: 1-18), context-sensitivity (items: 19-31), outdoor learning (items: 32-34), mobility (items 35-37), interaction with the interface (items: 38-45), and conversational learning (items: 46-53). Rostami and Kargozari (2023) originally designed this questionnaire in English and stated that about 15 minutes are needed to complete this questionnaire. Confirmatory factor analysis was used to check the construct validity of the Mobile Affordances Inventory. The reliability of the scale was .93 (Rostami & Kargozari, 2023).

2.2.2. Technophobia and Technophilia Questionnaire

This questionnaire, which was developed and validated by Martínez-Córcoles et al. (2017), was administered in English. The questionnaire consisted of 12 items related to technophobia and 18 items related to technophilia. Martínez-Córcoles et al. (2017) reported that the Cronbach alpha coefficient for technophobia was .95, indicating high internal consistency, and for technophilia as .82. It took participants approximately 10 minutes to complete the entire questionnaire ([Appendix A](#)).

2.3. Procedures

The present study followed a quantitative correlational research design as it attempted to investigate the relationship between Iranian EFL learners' perceptions of mobile affordances and their sense of technophobia and technophilia. To obtain the desired objectives, 200 EFL learners of different ages and language proficiency enrolled in all the language institutes of Iran participated by using the convenience sampling method. This method was chosen because it allowed for easy access to a large number of participants. The questionnaires were available in both paper-and-pencil and electronic versions. To create a comprehensive electronic questionnaire, the chosen questionnaires were

entered into a Google form. Therefore, the created Google form link was sent to the Telegram or WhatsApp groups of Iranian EFL learners. The questionnaires were distributed in telegram groups belonging to EFL learners across Iran, using both paper and pencil format and a Google form. It is noted that to accommodate participants who were elementary-level students and may not have fully understood the items of the questionnaire in English, the researchers provided assistance by either translating the items into Persian or offering clear instructions. This additional support aimed to ensure that all participants could effectively comprehend and respond to the questionnaire. In the present study, the obtained data were analyzed using SPSS statistics software (version 22). A Pearson correlation test and two independent samples t-tests were performed to analyze the data collected.

3. Results

A Pearson correlation test was performed to determine the correlation between Iranian EFL learners' mobile affordances perceptions and their sense of technophobia. Table 1 summarizes the findings. In accordance with the findings of Table 1 and the correlation test's assumption, there was a significant relationship between Iranian EFL learners' mobile affordances and their sense of technophobia since the relationship's significance level was less than .05. Furthermore, the relationship's intensity ($r = -0.226$) reflected a weak correlation between the two variables. The correlation coefficient sign indicates an inverse and negative relationship between the two variables.

In addition, another Pearson correlation test was performed to determine the correlation between Iranian EFL learners' mobile affordances perceptions and their sense of technophilia. As can be seen in Table 2, there was a significant relationship between Iranian EFL learners' mobile affordances perceptions and their sense of technophilia since the relationship's significance level was less than .05. Furthermore, the relationship's intensity ($r = 0.438$) reflected a relatively moderate correlation between the two variables. The correlation coefficient also indicated a direct and positive relationship between the two variables.

Table 3.
Independent Samples T-test for Technophobia

Levene's Test		t-test for Equality of Means							
Variable	F	Sig.	t	df	Sig.	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference	
								Lower	Upper
Technophobia	.017	.897	-.562	198	.575	-.05902	.10502	-.26613	.14808

Table 4.
Independent Samples T-test Technophilia

Levene's Test for Equality of Variances		t-test for Equality of Means							
Variable	F	Sig.	t	df	Sig.	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference	
								Lower	Upper
technophilia	2.52	.114	.790	198	.431	.06929	.08772	-.10370	.24229

Table 1.
Results of Pearson Correlation between Mobile Affordances and Technophobia

		mobile affordances	technophobia
Mobile affordances	Pearson Correlation	1.000	-.226**
	Sig. (2-tailed)	.	.001
	N	200	200
Technophobia	Pearson Correlation	-.226**	1.000
	Sig. (2-tailed)	.001	.
	N	200	200

** . Correlation is significant at the 0.01 level (2-tailed).

Moreover, to examine any significant difference between Iranian EFL learners' sense of technophobia regarding their gender, an independent samples t-test was performed to

Table 2.
Results of Pearson Correlation between Mobile Affordances and Technophilia

		mobile affordances	technophilia
Mobile affordances	Pearson Correlation	1.000	.438**
	Sig. (2-tailed)	.	.000
	N	200	200
Technophilia	Pearson Correlation	.438**	1.000
	Sig. (2-tailed)	.000	.
	N	200	200

** . Correlation is significant at the 0.01 level (2-tailed).

compare the means of two groups. The independent samples t-test revealed that there was no significant difference between male and female participants in terms of technophobia since the obtained p-value was more than 0.05 (Table 3).

Furthermore, to examine the significant difference between Iranian EFL learners' sense of technophilia regarding their gender, a comparison of the means of two groups in each variable was made by running an independent sample t-test. The independent samples t-test revealed that the technophilia variable had a significance level more than the standard error of 0.05, reflecting that the mean of men and women did not differ significantly in this variable (Table 4).

4. Discussion

The present study was conducted to investigate the relationship between Iranian EFL learners' mobile affordances and their sense of technophobia and technophilia using a correlational research design. To this end, two validated questionnaires were utilized, including the Technophobia and Technophilia Questionnaire (Martínez-Córcoles, et al., 2017), and the Mobile Affordances Inventory Rostami and Kargozari (2023).

The results of this study demonstrated that there was an inverse and negative correlation between EFL learners' mobile affordances and their sense of technophobia. This finding suggested that as individuals perceive mobile affordances more positively, their technophobia diminishes. These findings are consistent with previous studies in the field. For example, Kim and Rha (2018) investigated the factors that influence learners' decision to adopt mobile learning. Their study findings indicated that one of the factors for mobile learning and mobile affordances of Korean students would be mobile learning resistance which had the greatest effect on the intention to use mobile learning. In addition, it was demonstrated that learners suffered from greater levels of anxiety or experienced technophobia, which was totally in line with the findings of the present study. The other study that aligns with the current research was the one by Wang and Higgins (2006), indicating that it took a long time to persuade language learners to accept new technology. Stockwell (2008) also discussed that students' resistance to using mobile phones for language learning might be associated with the lack of preparedness to accept or use mobile phones for their learning purposes. He stated that it might not be linked to students' enthusiasm for using technology. It is directly associated with the expertise and skills they need to use their mobile phones. Thus, these findings align with previous studies conducted in different cultural contexts, highlighting the universal nature of this relationship.

Additionally, the results of the Pearson-moment correlation coefficient displayed a relatively positive correlation between Iranian EFL learners' mobile affordances perceptions and their sense of technophilia. This means that there was a connection between how these learners perceive the capabilities and functionalities of their mobile devices and their enthusiasm for technology. The positive value of the correlation coefficient indicated a direct relationship between these two variables. In other words, the more positive perception of Iranian EFL about mobile affordances leads to higher levels of technophilia. This suggests that when learners recognize and appreciate the capabilities and functionalities offered by their mobile devices, they are more likely to develop a positive attitude toward technology. In this regard, these findings align with previous studies conducted in related fields. For example, Baghcheghi (2020) investigated the university students' perceptions of mobile affordances and mobile learning and their willingness to use them to design a validated scale in which one of the factors was technophilia. In a subsequent study, Baghcheghi (2021) explored the relationships

between these variables. This study revealed a positive correlation among them, aligning with the findings of the present study.

In another study by Harris (2002), it was also found that mobile affordances and the learner's willingness to use them can improve interaction, communication, and problem-solving in the classroom. Moreover, in a more recent study by Ghaemi and Ataei (2022), it was presented that technophilic teachers were more likely to have a positive atmosphere in the classroom and respect students' perspectives than technophobic teachers. Hence, these findings are consistent with previous studies in the field, further validating the results obtained in the current study.

Moreover, the findings of the study indicated that the technophobia variable did not show a significant difference between men and women. This suggests that both male and female EFL learners in Iran have a similar level of technophobia. These results are consistent with the findings of other related studies in the field, arguing that men and women are similar regarding their sense of technophobia and gender has no impact on this variable (Dyck & Smither, 1994; Korukonda, 2005; Rahimi & Yadollahi, 2010; Uche, 2011). It means that the similarity in the results of these studies suggests that gender may not be a significant factor in influencing technophobia among EFL learners. Thus, other factors, such as prior experience with technology, individual attitudes, and cultural background may have a more significant impact.

In contrast with this study, some researchers (Corston & Colman, 1996; Sigurdson, 1991; Sultan & Kanwal, 2017) have stated that females are more likely to use computers with less self-confidence and more anxiety than men. Moreover, women are found to be more stressed while using technologies and experiencing them (Agogo & Hess, 2018; Ayyagari et al., 2011). On the other hand, Khasawneh (2015) discusses that males have a higher level of technophobia than females. Further, Abbasi and Tabatabaee-Yazdi (2021) have also argued that females are more likely to use technology with a higher level of stress and anxiety.

Furthermore, the present study also aimed to investigate whether there was any significant difference between Iranian EFL learners' sense of technophilia based on gender. The findings indicated that the mean scores of men and women did not significantly differ in terms of technophilia. This implies that both genders exhibited similar inclinations and attitudes toward technology. The result of the present study is in line with the investigations of some researchers (Abbasi & Tabatabaee-Yazdi, 2021; Dincher & Wagner, 2021; Edison & Geissler, 2003; Lam, 2016; Sarıçoban, 2013; Taiwo, 2009) who have stated that gender had no impact on the sense of technophilia in a different context. These findings suggest that gender may not be a determining factor in EFL learners' inclination toward technology. The findings of this study are not unique and can be generalized to other populations.

On the other hand, some studies have reported contrasting results regarding the influence of gender on technophilia. For example, some other researchers have

argued that gender have an important role in technology use and it is identified as a good predictor of technology acceptance (George & Ogunniyi, 2016; Longe & Uzoma, 2007; Wild et al., 2019). Additionally, other scholars in their studies have concluded that men are enthusiastic about using technology while women are more technophobic (Becta, 2010; Hashim, 2008; Kantrowitz & Rosenberg, 1994). Moreover, a negative relationship between the female gender and technophilia was also identified by Nimord (2018). These divergent findings suggest that the impact of gender on technophilia may vary across different populations and contexts.

5. Conclusion

In conclusion, the results of this study indicated that there was a significant relationship between Iranian EFL learners' mobile affordances and their sense of technophobia and technophilia. The findings showed that as learners' perception of mobile affordances increases, their sense of technophobia decreases. This suggested that mobile devices can help alleviate technophobia among EFL learners. Additionally, there was a positive correlation between learners' perception of mobile affordances and their sense of technophilia, indicating that the more learners perceived the capabilities and functionalities of their mobile devices, the more enthusiastic they were about technology. In other words, the positive relationship suggested that when learners recognized and appreciated the capabilities offered by their mobile devices, they were more likely to develop a positive attitude toward technology. This relationship was not due to chance and reflects a moderate association between the two variables. Overall, these findings highlight the importance of considering mobile affordances in language learning contexts to enhance learners' engagement with technology.

Moreover, the consistency of these findings across different studies and contexts indicated that gender was not a significant factor in explaining differences in technophilia and technophobia among EFL learners. These findings revealed that gender did not significantly shape Iranian EFL learners' perceptions and attitudes toward technology. Moreover, both genders displayed similar levels of fear and attitudes toward technology. It also suggested that other factors, such as personal interests, motivations, or educational background, may significantly shape individuals' sense of technophilia and technophobia. Hence, this study added to the growing body of research suggesting no significant difference in technophilia and technophobia among EFL learners based on gender.

It is important to note that the present study focused specifically on Iranian EFL learners, and the findings may not be generalizable to other populations or cultural contexts. It would be important to replicate the study with participants from different countries and educational backgrounds to determine if similar relationships exist. Additionally, the study relied on self-report measures, which were subject to biases and may not accurately reflect participants' actual behaviors or attitudes. Future research

could incorporate objective measures or observational data to provide a more comprehensive understanding of the relationship between mobile affordances and technophobia/technophilia. Besides, further research with larger and more diverse samples is warranted to gain a comprehensive understanding of the relationship between gender and technophilia and technophobia. Additionally, the study only examined the relationship between gender, technophobia, and technophilia, without considering other potential factors that could influence these attitudes, such as age, personal interests, motivations, educational background, or socioeconomic status. Therefore, the findings may not provide a comprehensive understanding of the factors influencing technophobia and technophilia in EFL learners. In this regard, further research could explore other factors that may influence technophobia and technophilia in this population.

Declarations

Competing interest

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Authors' contribution

Aynaz Samir designed the study, collected and analyzed the data, and wrote the initial draft of the manuscript. Mona Tabatabaee-Yazdi contributed to the data analysis and provided critical revisions to the manuscript. Both authors read and approved the final version.

Availability of data and materials

The datasets analyzed during the current study are available from the corresponding author upon reasonable request.

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References

- Abbasi, F., & Tabatabaee-Yazdi, M. (2021). EFL teachers' personality traits and their sense of technophobia and technophilia. *Journal of Research in Techno-based Language Education*, 1(2), 1-14.
- Agogo, D., & Hess, T. J. (2018). How does tech make you feel? A review and

- examination of negative affective responses to technology use. *European Journal of Information Systems*, 27(5), 570-585. <https://doi.org/10.1080/0960085X.2018.1435230>
- Ayyagari, R., Grover, V., & Purvis, R. (2011). Technostress: Technological antecedents and implications. *MIS Quarterly*, 35, 831-858. <https://doi.org/10.2307/41409963>
- Baghchehi, N., & Koohestani, H. R. (2021). The relationship between the willingness to mobile learning and educational achievements in health-care professional students. *Journal of Education and Health Promotion*, 10(1), 378-383. https://doi.org/10.4103/jehp.jehp_1491_20
- Baghchehi, N., Koohestani, H. R., & Karimy, M. (2020). Design and psychometric properties of willingness to mobile learning scale for medical sciences students: A mixed-methods study. *Journal of Education and Health Promotion*, 9(1), 141-150. https://doi.org/10.4103/jehp.jehp_153_20
- Becta, B. (2004). Educational Communications and Technology Agency. A review of the research literature on barriers to the uptake of ICT by teachers. Retrieved 17 July, 2023 from <http://www.becta.org.uk>
- Boehme-Neßler, V. (2011). Caught between technophilia and technophobia: Culture, technology and the law. *Pictorial Law*. (pp. 1-18). Springer. https://doi.org/10.1007/978-3-642-11889-0_1
- Brosnan, M. (2002). Technophobia: The psychological impact of information technology. *Computers in Human Behavior*, 15, 105-121. <https://doi.org/10.4324/9780203436707>
- Bruce, V., Green, P. R., & Georgeson, M. A. (2003). *Visual Perception: Physiology, psychology and ecology*, 4th Edition. Psychology Press.
- Corston, R., & Colman, A. (1996). Gender and social facilitation effects on computer competence and attitude toward computers. *Journal of Educational Computing Research*, 14(2), 171-183. <https://doi.org/10.2190/7VW3-W6RV-6DCP-70MN>
- Damani, K., Daltry, R., Jordan, K., Hills, L. & Evans, L. (2022). EdTech for Ugandan girls: Affordances of different technologies for girls' secondary education during the Covid-19 pandemic. *Development Policy Review*, 40(S2): e12619. <https://doi.org/10.1111/dpr.12619>
- Demir, K., & Akpinar, E. (2018). The effect of mobile learning applications on student academic achievement and attitudes toward mobile learning. *Malaysian Inline Journal of Educational Technology*, 6(2), 48-59. <https://doi.org/10.17220/mojet.2018.02.004>
- Dincher, M., & Wagner, V. (2021). Teaching in times of Covid-19: Determinants of teachers' educational technology use. *Education Economics*, 29(5), 461-470. <https://doi.org/10.1080/09645292.2021.1920000>
- Dyck, J. L., & Smither, J. A. (1994). Age differences in computer anxiety: The role of computer experience, gender, and education. *Journal of Educational Computing Research*, 10(3), 239-291. <https://doi.org/10.2190/E79U-VCRC-EL4E-HRYV>
- Edison, S. W., & Geissler, G. L. (2003). Measuring attitudes towards general technology: Antecedents, hypotheses and scale development. *Journal of Targeting, Measurement and Analysis of Marketing*, 12(2), 137-143. <https://doi.org/10.1057/palgrave.jt.5740104>
- Egessa, M., Liyala, S., & Ogara, S. (2021). Affordance theory in information and communication technology for development (ICT4) research. *International Research Journal of Modernization in Engineering Technology and Science*, 3(1). 324-332.
- Fallad, J., Hueso, E. J., & Ramírez, D. E. (2012, July). Psychological and cultural foundations towards technophilia and technophobia [Paper presentation]. *Tenth LACCEI Latin American and Caribbean Conference for Engineering and Technology*, Panamá City, Panamá. Retrieved from <https://laccei.org/LACCEI2012-Panama/ExtendedAbstracts/EA071.pdf>
- George, F., & Ogunniyi, M. (2016). Teachers' perceptions on the use of ICT in a CAL environment to enhance the conception of science concepts. *Universal Journal of Educational Research*, 4(1), 151-156. <https://doi.org/10.13189/ujer.2016.040119>
- Ghaemi, H., & Ataei, M. (2022). The cultuig analysis of technophobe and technophile EFL teachers' utterances in online classes. *The International Journal of Language and Cultural*, 4(1), 1-23.
- Harris, J. (2002). Wherefore art thou, Telecollaborations? *Learning and Leading with Technology*, 28(8), 46-49.
- Hashim, J. (2008). Learning barriers in adopting ICT among selected working women in Malaysia. *Cyber Psychology of Behavior*, 23(5), 317-326. <https://doi.org/10.1108/17542410810887356>
- John, O. P., & Srivastava, S. (1999). The Big-Five trait taxonomy: History, measurement, and theoretical perspectives. *Handbook of personality: Theory and research*, 2, 102-138.
- Rosen, L. D. & Weil, M. M. (1990). Computers classroom instruction and computerphobic university student. *Collegiate Microcomputer*, 8(4), 257-283.
- Rostami, Z., & Kargozari, H. R. (2023). The effects of Iranian EFL learners' individual characteristics on their perceptions toward mobile affordances. *Journal of Research in Techno-based Language Education*, 3(2), 1-18.
- Kantrowitz, B., & Rosenberg, D. (1994). Men, women & computers. *Newsweek*, 123(20), 48-55.
- Khasawneh, O. (2018). Technophobia without boarders: The influence of technophobia and emotional intelligence on technology acceptance and the moderating influence of organizational climate. *Computers in Human Behavior*, 88, 210-218. <https://doi.org/10.1016/j.chb.2018.07.007>
- Khasawneh, O. (2015). *The impact of technophobia on technology acceptance and the moderating influence of transformational leadership, organizational climate, and emotional intelligence* [Doctoral dissertation, Eastern Michigan University].
- Kim, H. J., & Rha, J. Y. (2018). Predicting the drivers of the intention to use mobile learning in South Korea. *International Journal of Interactive Mobile Technologies*, 12(1), 116-132. <https://doi.org/10.3991/ijim.v12i1.7688>
- Korukonda, A. R., & Finn, S. (2003). An investigation of framing and scaling as confounding variables in information outcomes: The case of technophobia. *Information Sciences*, 155(2), 79-88. [https://doi.org/10.1016/S0020-0255\(03\)00153-1](https://doi.org/10.1016/S0020-0255(03)00153-1)
- Korukonda, A. R. (2005). Personality, individual characteristics, and predisposition to technophobia: Some answers, questions, and points to ponder about. *Information Sciences*, 170(2-4), 309-328. <https://doi.org/10.1016/j.ins.2004.03.007>
- Lam, Y. (2016). Technophilia vs. technophobia: A preliminary look at why second-language teachers do or do not use technology in their classrooms. *The Canadian Modern Language Review*, 56(3), 389-394. <https://doi.org/10.3138/cmlr.56.3.389>
- Lai, C. H., Yang, J. C., Chen, F. C., Ho, C. W., & Chan, T. W. (2007). Affordances of mobile technologies for experiential learning: The interplay of technology and pedagogical practices. *Journal of Computer Assisted Learning*, 23(4), 326-337. <https://doi.org/10.1111/j.1365-2729.2007.00237.x>
- Lloyd, M. (2019). Imagining the affordances of mobile devices as a mechanism in teaching and learning. *International Journal of Educational Technology*, 5(1), 37-48.
- Longe, O. B., & Uzoma, O. V. (2007). Technophobia and its impact on adults learning to use computers in south western Nigeria. *Journal of Information Technology Impact*, 7(1), 81-90.
- Martínez-Córcoles, M., Teichmann, M., & Murdvee, M. (2017). Assessing technophobia and technophilia: Development and validation of a questionnaire. *Technology in Society*, 51, 183-188. <https://doi.org/10.1016/j.techsoc.2017.09.007>
- Naismith, L., Lonsdale, P., Vavoula, G., & Sharples, M. (2004). *Literature review in mobile technologies and learning*. Futurelab series. Retrieved from: <http://hdl.handle.net/2381/8132>
- Nimord, G. (2018). Technophobia among older Internet users. *Educational Gerontology*, 44(2-3), 1-10. <https://doi.org/10.1080/03601277.2018.1428145>
- Norman, D. A. (1988). *The psychology of everyday things*. Basic Books.
- Orr, G. (2010). A review of literature in mobile learning: Affordances and constraints. In *Proceedings of 6th IEEE international conference on wireless, Mobile and Ubiquitous Technologies in Education*, pp. 107-111. <https://doi.org/10.1109/WUMTE.2010.20>
- Osiceanu, M. E. (2015). Psychological implications of modern technologies: Technophobia versus technophilia. *Procedia-Social and Behavioral Sciences*, 180, 1137-1144. <https://doi.org/10.1016/j.sbspro.2015.02.229>
- Parsons, D., Thomas, H., & Wishart, J. (2016). Exploring mobile affordances in the digital classroom. *The 12th International Association for Development of the Information Society (IADIS) International Conference on Mobile Learning*.
- Rahimi, M., & Yadollahi, S. (2010). Computer anxiety and ICT integration in English classes among Iranian EFL teachers. *Procedia Computer Science*, 3, 203-209. <https://doi.org/10.1016/j.procs.2010.12.034>
- Rouf, M.A., Hossain, M.S., Habibullah, M., & Ahmed, T. (2022). Online classes for higher education in Bangladesh during the COVID-19 pandemic: A

- pception-based study, PSU Research Review.
- <https://doi.org/10.1108/PRR-05-2021-0026>
- Sarıçoban, A. (2013). Pre-service ELT teachers' attitudes towards computer use: A Turkish survey. *Eurasian Journal of Educational Research*, 53, 59-63. <https://doi.org/10.14689/ejer.2013.53.4>
- Schein, E. H. (1985). *Organizational culture and leadership* San Francisco. Jossey-Bass.
- Sigurdson, J. (1991). Computer experience, attitudes toward computers, and personality characteristics in Psychology undergraduates. *Personality and Individual Differences*, 12(6), 617-624. [https://doi.org/10.1016/0191-8869\(91\)90259-E](https://doi.org/10.1016/0191-8869(91)90259-E)
- So, H. J., Kim, I., & Looi, C. K. (2008). Seamless mobile learning: Possibilities and challenges arising from the Singapore experience. *Educational Technology International*. 9(2), 97-121.
- Stockwell, G. (2008). Investigating learner preparedness for and usage patterns of mobile learning. *ReCALL*, 20(3), 253-270. <https://doi.org/10.1017/S0958344008000232>
- Sultan, S., & Kanwal, F. (2017). Personal attributes contributing to computer anxiety and computer self-efficacy among distance learners. *Bullet of Education and Research*, 39(1), 33-36.
- Taiwo, S. (2009). Teachers' perception of the role of media in classroom teaching in secondary schools. *The Turkish Online Journal of Educational Technology*, 8(1), 8.
- Tan, E., & So, H. J. (2015). Rethinking the impact of activity design on a mobile learning trail: The missing dimension of the physical affordances. *IEEE Learning Technologies*, 8(1), 98-100. <https://doi.org/10.1109/TLT.2014.2376951>
- Minikutty, A., & Thomas, S. P. (2019). Influence of technophilia on academic achievement of higher secondary school students. *International Journal of Creative and Innovative Research in All Studies*, 2(6), 70-73.
- Uche, R. D. (2011). Dimensions of technophobia-technophilia among senior staff members of the university Calabar, Nigeria. *Global Journal of Educational Research*, 10(1), 35-42.
- Ullman, E. (2012). *Close to the machine: Technophilia and its discontents*. City Lights.
- Books. USA. Wang, S., & Higgins, M. (2006). Limitations of mobile phone learning. *The JALT CALL Journal*, 2(1), 3-14. <https://doi.org/10.29140/jaltcall.v9n1.146>
- Wild, K., Mattek, N., Sharma, N., Marcoe, J., Wall, R., & Kaye, J. (2019). Use of technology by four diverse cohorts of older adults: findings from the cart study. *Innovation in Aging*, 3(1), 328-330. <https://doi.org/10.1093/geroni/igz038.1196>
- Xue, S., & Churchill, D. (2022). Educational affordances of mobile social media for language teaching and learning: A chinese teacher's perspective. *Computer Assisted Language Learning*, 35(4), 918-947. <https://doi.org/10.1080/09588221.2020.1765811>

Appendix A.

Technophobia and Technophilia Questionnaire developed and validated by Martínez-Córcoles et al. (2017)

Items	Strongly disagree	Disagree	Neutral	Agree	Strongly agree
Technophobia					
I feel an irrational fear of new equipment or technology					
I avoid the use of new equipment and technology					
I feel uncomfortable when I use new equipment or technology					
I find it difficult to complete computerized tasks					
I find it very difficult to learn about how to use new technology					
I feel incompetent because I don't like to use new equipment or technology					
I'm resistant to back up hard drives or organize files in my computer					
I feel unskilled for the use of new equipment or technology					
I feel excessive sweating while working with new equipment or technology					
I feel heart palpitations while working with new equipment or technology					
I feel anxious while working with new equipment or technology					
I feel forced to change my way of working because of new equipment or technology					
Technophilia					
I am excited for new equipment or technology					
I'm afraid of being left behind if I cannot use the latest equipment or technology.					
I enjoy using new equipment or technology					
The use of new equipment or technology influences considerably my personal life					
I think that new technology has a lot of benefits					
My experience with all the new technologies is positive					
The use of new equipment or technology influences considerably my personal feelings					
I feel fear of being left behind if I can't use the latest equipment or technology					
I have recently acquired new technology					
I feel loss of control if I can't use the latest equipment or technology					
I believe that new technology improve life					
The use of new equipment or technology affects my intimacy					
Lastly, I have used new equipment or technology too frequently					
I feel enthusiasm for new equipment or technology due to its novel value					
I feel restless and worried if I can't use my computer or smartphone/mobilephone					
I feel enthusiasm when a new technology/product is launched					
I'm afraid of failing if I can't use the latest equipment or technology					
I have spent more time using new equipment or technology than is reasonable					